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ABSTRACT

This group of six papers deals with various aspects of the Far West Laboratory of Educational Research and Development project to develop minicourses, short inservice training courses using the microteaching technique and videotape recorder to teach specific teaching behavior patterns. Included are 1) "Overview of the Teacher Education Program," which describes the background and objectives for development of the minicourse instructional model, the progress to date (March 1969), and related work on role-playing and discussion-stimulation models as well as on adaptation of the minicourses for use in preservice education; 2) "Questions and Answers about the Minicourse Model," 24 questions revealing the basic information about the project; 3) "Minicourses Currently Being Developed at the Laboratory..." (dated August 1970), a list of 21 minicourses plus a classroom simulation and a stimulation-discussion with course goal and testing dates for each; 4) "The 27 Steps in the Development Program," an outline of the research and development strategy; 5) "The Three Tests in the Minicourse Development Cycle," a description of the three field tests (Preliminary, main, and operational) that are a regular part of the research and development cycle for minicourses and other products; and 6) "Possible Research Questions Related to the Minicourse Model," 19 briefly stated questions intended to suggest tentative research plans. (SP 004 465 and SP 004 615 are related documents.) (JS)

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OVERVIEW OF THE TEACHER EDUCATION PROGRAM

Program Selection

The Teacher Education Program was selected as the primary program of the Far West Laboratory for Educational Research and Development at a meeting of the Board of Directors in March, 1967. Based on a needs survey carried out during the Laboratory's formative period, a number of important educational needs were identified. Among these was the area of teacher education. Within this area, it was decided to focus the efforts of the program upon teacher training products designed to develop specific teaching skills and classroom behavior patterns. In reviewing the state of the art, it was apparent that this aspect of teacher education was seriously in need of improvement. It has been generally agreed, both in and out of the teaching profession, that the conventional courses in teaching methods are the weakest aspect of teacher education. There is virtually no evidence to indicate that teaching methods courses make any significant change in the subsequent classroom behavior of teachers.

In addition to the pressing need for better teacher education, the Laboratory had a second reason for moving in this direction. This was the fact that work at the Stanford Research and Development Center in the areas of microteaching, modeling, and basic teaching skills had provided a research base upon which it appeared possible to build an effective program. The Stanford microteaching research had produced significant changes in the

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behavior of teacher interns. The microteaching approach appeared to have the potential for producing not only statistically significant changes, but major practical changes in teaching skills.

Objectives

Two major objectives have evolved in the Teacher Education Program. The first is to develop instructional models that can bring about major changes in specific teacher skills and classroom behavior. The second is to develop a subsystem of teacher education that would change teacher behavior in all or most of the teaching skills that appear to be critical to teacher effectiveness.

The Instructional Model

To date most of the work in the Teacher Education Program has centered upon development of the minicourse instructional model. The minicourse model, which is an adaptation and extension of the Stanford Microteaching Model, involves a three-step instructional sequence. In the first step, the trainee views a videotaped instructional lesson in which one to three specific teaching skills are described and illustrated with brief classroom clips. The trainee then views a brief videotaped class sequence which shows a model teacher using these skills in a microteaching situation. This lesson has two functions. The first is to provide the trainee with a clear model of each skill and examples of how each skill can be utilized in a brief lesson. The second is to help the trainee recognize and discriminate among the skills when viewed in the instructional lesson. As the model lesson progresses the trainee is called upon to identify each skill as it occurs. He receives prompt feedback on the correctness of his identification.

The second step in the minicourse model requires the trainee to prepare a brief lesson using the skills covered in the instructional and model tapes, and teach this lesson in a microteaching situation, i.e., a brief lesson involving four to eight pupils. The trainee records this lesson on videotape and immediately upon its completion, replays the videotape and evaluates the replay using special evaluation forms developed for this purpose.

In the third step of the minicourse instructional cycle, the trainee replans the microteach lesson and reteaches this lesson to another group of pupils. The reteach lesson is also recorded on videotape and again the trainee evaluates his or her performance during replays of the tape.

Progress to Date

The R & D cycle employed in the development of minicourses is designed to build a product that is fully ready for operational use in the schools and to provide hard evidence that the product meet its objectives. Three field tests are employed in the development of a minicourse. After developing the initial form of the product, a preliminary field test is carried out. The purpose of this test is to determine whether the course is feasible and provide preliminary feedback on the effectiveness of each element of the course. After the preliminary field test the course is revised and a main field test is conducted. The purpose of the main field test is to make a quantatitive evaluation of the course. This field test involves collecting a sample of teacher behavior on videotape before and after training and analyzing these tapes to determine the amount of behavioral change in the specific skills taught in the course. A second

purpose of the main field test is to collect further qualitative feedback from teachers and observers regarding further improvements that appear needed. If the main field test indicates that the course is successful in meeting its objectives, the next revision is subjected to an operational field test. The purpose of this field test is to determine whether the course is fully ready for operational use and to identify any points at which additional materials are required to make the package complete. Based on questionnaires, interviews and observations during the operational field test, a final revision of the course is produced and made available for operational use.

Minicourse 1, which is concerned with specific skills related to the teachers' effectiveness in conducting class discussion lessons, has been in operational use since May of 1968. The research evidence that we obtained in the main field test evaluation of Minicourse 1 indicates that this instructional model shows great promise as an approach to making substantial changes in the teacher's use of specific classroom skills. Of the eleven classroom skills that were scored on the teachers' pre-course and post-course videotapes, statistically significant changes were made in nine. Seven of these nine changes were sufficiently large to indicate major differences in the manner in which field test teachers conducted discussion lessons. For example, one skill covered in Minicourse 1 was designed to increase the proportion of higher cognitive questions and reduce the proportion of fact questions asked by teachers during class discussion lessons. On the pre-course videotapes the average percentage of higher cognitive questions was 26 percent while on the post-

course tapes this average had doubled to 52 percent. A further check of this skill was made by counting the number of words in pupil responses since higher cognitive questions generally require longer pupil responses. The average pupil response on the pre-course tapes was 5.7 words. On the post-course videotapes this response had increased to 11.5 words.

In order to determine whether teachers continue to use the skills learned in Minicourse 1, a third videotape was made of each teacher's performance four months after the completion of the course. A comparison between these delayed post-course videotapes and the immediate post-course videotapes showed that virtually no loss occurred on the Minicourse 1 skills over the four month period. In fact, a significant loss occurred in only one behavior, prompting, while on two other behaviors, use of further clarification and teacher repetition of their own questions, significant improvement took place between the post-course and delayed post-course tapes. The lack of regression on the delayed post-course tapes would suggest that teachers are incorporating the Minicourse 1 discussion skills into their regular teaching.

We are just completing the main field test on four more minicourses. The results of the main field test evaluation of these courses will be completed by late summer. If the results of these tests are as favorable as our findings on Minicourse 1, the minicourse instructional model will be established as the most effective tool for bringing about changes in teacher behavior that is available to education.

In addition to the courses mentioned above, 5 minicourses are in the initial development stages. Two of these courses will undergo preliminary field testing during the coming summer.

Other Teacher Education Program Efforts

Although the minicourse model has consumed most of the effort of our program to date, work is also progressing in a number of other areas. Our experiences with Minicourse 1 indicate that this instructional model is not effective in developing behaviors that occur in the classroom at a low frequency level. We believe the failure of the model in developing low frequency behaviors is due to the fact that teachers have little opportunity to practice such behaviors in the microteach and reteach lessons, simply because the behaviors do not occur. To make it possible for us to train teachers in skills and behaviors that occur infrequently and those that the teacher cannot practice without some prior behavior taking place on the part of students, we are developing a second instructional model which we call the role-playing model. The principle difference between the role-playing and the microteaching model is that in the former, pupils will play roles during the microteach and reteach lessons which provide the teacher with opportunities to practice the skills being learned. For example, it is unlikely that the minicourse model would be effective in training teachers to deal with disciplinary problems since very few disciplinary problems occur naturally in the microteach and reteach situations. The role-playing model should be much more effective for this type of teaching since students in this model would play roles in which the teacher would be called upon to respond to disciplinary problems.

Another effort in the Teacher Education Program that is gaining considerable momentum is aimed at the adaptation of the minicourses for use in preservice education of teacher trainees in colleges and universities.

To date, Minicourse 1 materials have been tried out in 14 colleges and universities. The preservice component has two major objectives. The first to adapt the minicourses for preservice training and encourage their use in this context. The second is to collect additional research evidence on various aspects of the minicourse model that will permit the further development and improvement in that model. Several cooperative research efforts between the Laboratory and colleges and universities are currently underway. For example, a study currently underway at the University of Nevada is designed to test the relative effectiveness of videotape feedback as compared with audio tape feedback on the microteach and reteach lessons. Another ongoing study at Fredonia State College in New York tests the relative effectiveness of self-feedback as compared with pupil feedback from the replays of the microteach and reteach lessons.

Another component in the Teacher Education Program is designed to provide teachers with insights and skills that will better fit them to deal with human relations problems in inter-city and racially mixed schools. This model employs filmed confrontation situations as discussion stimulators and attempts to develop teacher sensitivity through discussion and role-playing situations. A preliminary test of the first course built upon this model has been completed and the package is currently being revised for further testing.

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QUESTIONS AND ANSWERS ABOUT THE MINICOURSE MODEL

1. Why does the Far West Laboratory for Educational Research and Development call their inservice training courses, Minicourses?

A. The term "minicourse" was coined to describe the unique model employed in our courses. This term indicates a short course designed to teach specific teacher behavior patterns built around the microteaching technique and the use of the videotape recorder. This term helps differentiate our courses from other inservice training courses that use other variations of videotape recorder feedback or microteaching.

2. Why does your course have teachers prepare and teach short lessons of around ten minutes when typical classroom lessons are much longer?

A. We want the teacher to practice the new skills she is learning in a simpler situation than that found in the regular classroom. Usually, since the teacher must only practice two or three skills in a given microteaching lesson, these skills can be incorporated into short lessons. In Minicourses where the skills cannot be adequately practiced in short lessons, the teachers are asked to prepare longer lessons.

3. Why do teachers in your course practice their lessons with only five or six pupils instead of an entire class?

A. Again, because we want the teacher to learn the skill under a simpler set of circumstances than found in the regular classroom. However, our research to date as well as research carried out at Stanford University, indicates that once having mastered a skill, teachers can usually transfer from the microteaching situation to the regular classroom situation. In evaluating our courses, we measure the teacher's behavior before and after taking the course. These measures are made with the teacher's entire class and not in the microteaching situation. Our results show clearly that teachers who have learned a skill in the microteaching situation can and do use this skill in their regular classrooms.

4. Since the Minicourses are generally short, will teachers remember the skills learned for any length of time after completing the course?

A. On Minicourse 1 we made a videotape in the regular classes of 38 teachers four months after they had finished the course. We then compared this videotape with one we had made immediately after they

had finished the course to see if they were still using the skills. The results were very encouraging. Of the 15 behaviors we scored, these teachers showed a lower level of performance on only one. They had gained significantly on three others and on the remainder had maintained the performance level they had reached right after completing the course. With conventional courses, the average person forgets a great deal over a period of 4 months. Why did teachers remember so well the skills learned in the Minicourse? We believe there are two reasons. The Minicourse teaches useful skills rather than unusable facts. The teachers continued to apply these skills in their classrooms after the course was over.

5. Isn't the Minicourse really a one-shot approach to teacher training?

A. No, each Minicourse is accompanied by materials that the teacher will use over a period of nine months after completing the course. This follow-up program includes a monthly activity for teachers to engage in that will help them review or improve their skills. The follow-up lessons are also conducted in the teacher's regular classroom and do not require a videotape recorder.

6. Couldn't the teachers get just as much out of the course by watching your films without going through the expense and time required to carry out the microteaching and reteaching parts of the course?

A. We are currently doing research to determine the relative importance of the parts of the Minicourse model. However, what we know of the psychology of learning would indicate that the microteaching and reteaching, in which the teacher actually tries out the skills under controlled conditions, are probably the most important parts of the course. Without these the course would be reduced to a series of instructional films. Instructional films convey information effectively, but have limited value in themselves as a device for helping teachers develop specific teaching behaviors.

7. Your instructional films are generally somewhat repetitious. Is this repetition necessary?

A. Our own experiences with earlier forms of Minicourse 1, plus research evidence indicates that learning increases markedly if main points are repeated and presented to the learner in a variety of ways, such as through verbal description, visual presentation, presentation of examples, etc. Even with the amount of repetition built into the course, many teachers find it necessary to play our instructional films for a second time in order to get a better understanding of the content. Therefore, it appears that the repetition and variety of presentation embodied in the Minicourse model is necessary for effective learning.

8. Most inservice courses concerned with teaching skills involve the use of a supervisor to give the teachers advice on their teaching. Why doesn't the Minicourse model include a supervisor?

A. It is our objective to build Minicourses that can be used for inservice training in any school where the necessary equipment is available. Since supervisory feedback is only useful if the supervisors are carefully trained in the specific behaviors taught, the use of supervisors in the Minicourse would make the course less usable because it would be limited to districts where supervisory personnel were available and could be trained. In preservice programs using microteaching, such as the Stanford Intern Program, supervisors are used. However, in this situation, the training is centralized on campus and the supervisors are thoroughly trained before working with the teacher interns. Research at Stanford, however, has indicated that the use of supervisors does not add significantly to the effectiveness of the microteaching approach over the use of model teachers alone. We are still studying the effects of supervisory feedback, however, and it is possible that some of our later courses will incorporate this feature.

9. What is the purpose of the model lesson?

A. The model lessons are designed to illustrate the behaviors described on the instructional tape within the context of a regular lesson. Another purpose of the model lesson is to help the teacher develop a sensitivity for the behaviors being taught by requiring the trainee to watch for these behaviors in the model lesson and identify them when they occur. A considerable body of research indicates that use of models is an effective way to help individuals learn skills or behavior patterns.

10. Some of the skills in Minicourses, such as "redirection"* in Minicourse 1, seem very simple. Can changing this kind of teacher behavior make any real difference in teacher effectiveness?

A. Teacher use of a simple technique such as redirection can make a tremendous difference in the teaching situation. First, the teacher must ask questions that can be redirected. Simple fact questions cannot be redirected because they have only one answer. Thus, the teacher asks questions which require the pupil to think rather than give a memorized fact answer. Second, since redirection greatly reduces teacher talk, this technique increases the time available for pupil participation. Pupils learn more when they are <u>active participants</u> rather than passive listeners. Third, redirection can be used to get pupils to respond to each other. It breaks up the teacher-pupil, teacher-pupil recitation pattern which discourages a real exchange of ideas.

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*In redirection, the teacher asks a question that involves several ideas or can be answered in several parts. The teacher then redirects the question to several pupils, each of whom contributes to the total answer.

Thus, a simple skill such as redirection can make a great difference in the kind of class discussion a teacher conducts. Many of the skills taught in Minicourses are simple, but none are trivial.

11. Why does the Minicourse teach only a few skills? The course doesn't seem to have much "meat" in it.

A. When we first developed Minicourse 1 it covered as many as eight teaching skills in a lesson. The final version of the course teaches only three skills per lesson. We found that there is a great difference between learning about a skill and being able to use the skill effectively in a classroom. Most teachers cannot learn to use more than three skills at a time.

12. Experienced teachers already know about most of the skills taught in Minicourse 1. Is the course of any value for such teachers?

A. Although most experienced teachers have heard of the skills and techniques covered in Minicourse 1, few of them have learned to use these skills effectively in their teaching. The average teacher in the field test of Minicourse 1 had nine years of teaching experience. Yet, these teachers made great improvement in using the Minicourse 1 skills. In fact, we have some evidence indicating that experienced teachers learn more from a Minicourse than inexperienced teachers.

13. Why is a videotape recorder required for the Minicourse? Wouldn't a regular audio tape recorder work just as well?

A. Some of the skills taught in Minicourses cannot be satisfactorily captured on an audio recorder. For example, the teacher can redirect a question by simply nodding to a pupil. However, most skills do involve language and could probably be learned using an audio tape recorder for the microteach and reteach lessons. Videotape is more interesting and is probably more effective since it provides both visual and auditory feedback. We are currently studying the effectiveness of audio tape recorders.

14. How effective is the Minicourse in helping teachers develop more effective teaching skills?

A. Our research indicates that the Minicourse brings about greater changes in specific teaching skills than any other approach that has been reported in the professional literature. Furthermore, evidence to date indicates that the improvements brought about by the Minicourse become a permanent part of the teacher's repertoire.*

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*For a detailed report of research on five Minicourses, see The Minicourse--A Microteaching Approach to Teacher Education, by Borg, Kelley, Langer and Gall, Macmillan Educational Services, 1970.

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MINICOURSES CURRENTLY BEING DEVELOPED AT THE FAR WEST LABORATORY FOR EDUCATIONAL RESEARCH AND DEVELOPMENT

		Testing Dates*
Minicourse 1:	"Effective Questioning in a Classroom Discussion" (Elementary) has been commercially produced and is available from Macmillan Educational Services, Inc.	
Minicourse 2:	"Thought and Language: Skills for Teaching the Child with Minimal Language Development" Course Goal: To increase teacher skills that encourage the acquisition of language.	OFT Oct. 1969
Minicourse 3:	"Effective Questioning in a Classroom Discussion" (Secondary) Course Goal: To increase the effectiveness of the questioning techniques of secondary school teachers and the quantity and quality of student participation (grades 7-12) in class discussion situations.	OFT Oct. 1969
Minicourse 4:	"Verbal Interaction" Course Goal: To train teachers to categorize their classroom behavior in the Flanders' system.	MFT Oct. 1970
Minicourse 5:	"Effective Tutoring in Elementary School Mathematics" is being commercially produced and will be available from Macmillan Educational Services, Inc., in Course Goal: To increase teachers' effectiveness in diagnosis, demonstration of problem-solving procedures, and evaluation of learning during math tutoring sessions; to increase the amount of time teachers spend in structured tutoring of students' math difficulties.	Nov. 1970
Minicourse 8:	"Organizing the Kindergarten for Independent Learning and Small Group Instruction" Course Goal: To provide kindergarten teachers with a set of skills (organizational procedures) that will make it possible for them to instruct, uninterrupted, a group of 5 children for ten minutes while the remaining 20 or more children work independently.	OFT Oct. 1969

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* OFT = Operational Field Test, MFT = Main Field Test, PFT = Preliminary Field Test

		Testing Dates
Minicourse 9:	"Thought Questions in the Intermediate Grades" Course Goal: To increase teacher effectiveness (grades 4-8) in asking questions which require the use of complex thinking skills.	OFT Oct. 1970
Minicourse 10:	"Role Playing as an Instructional Technique" Course Goal: To train teachers in the use of role-playing skills for wide range application in the classroom.	PFT Oct. 1970
Minicourse 11:	"Teaching Skills that Develop Independent Learning in the Secondary Classroom" Course Goal: To develop teacher skills that facilitate learner independence in a wide range of subject areas.	PFT Nov. 1971
Minicourse 13:	"Expository Teaching" Course Goal: To increase secondary teacher effectiveness in explaining and in conveying information through the use of oral exposition.	MFT Oct. 1970
Minicourse 14:	"Improving Teacher and Pupil Skills in Discussing Controversial Issues" Course Goal: To develop teacher and pupil skills in discussion and critical appraisal of controversial social issues.	MFT Jan. 1971
Minicourse 15:	"Teaching Skills that Develop Independent Learning in the Upper Elementary Years" Course Goal: To develop teacher skills that facilitate learner independence in a wide range of subject areas.	OFT Oct. 1970
Minicourse 16:	"Peer and Cross-Age Tutoring" Course Goal: To train pupils in skills needed to function effectively as tutors of their peers or younger pupils.	PFT June 1971
Minicourse 17:	"The Use of Role-Playing in the Social Sciences" Course Goal: To develop teacher skills in using role-playing techniques to demonstrate and analyze social and governmental situations.	PFT Dec. 1972

		Testing Dates
Minicourse 18:	"Teaching to Increase Reading Proficiency" Course Goal: To develop teacher skill in the use of instructional procedures that improve student learning in the area of reading.	PFT Oct. 1970
Minicourse 19:	"Inquiry Strategies to be Used in the Classroom" Course Goal: To develop teacher skill in the use of multiple inquiry strategies in the elementary classroom.	PFT Jan. 1972
Minicourse 20:	"Divergent Thinking" Course Goal: To help the teacher to establish a classroom environment and to use teaching techniques that encourage divergent thinking.	PFT Oct. 1970
Minicourse 21:	"Problem Solving" Course Goal: To help teachers in the intermediate grades to set up problem solving situations, and assist students in developing problem solving tactics.	PFT Dec. 1971
Classroom Simulation 1:	"Techniques for Evaluating and Solving Pupil Disruptions to the Learning Environment (Upper Elementary Years)" Course Goal: To develop teaching skills in solving problems that result from the actions of pupils who disrupt the classroom learning environment.	PFT Dec. 1970
Stimulation-Discussion-Action 1:	"Confrontations - A Human Relations Training Unit" Course Goal: To enable teachers to (1) analyze social-minority problems at their school, and (2) propose and implement solutions to those problems.	Released on an Experimental Basis

9/30/68

Far West Laboratory for Educational Research and Development

THE 27 STEPS IN THE DEVELOPMENT PROGRAM

By Walter Borg and Paul Hood

Procedures

The procedures established to implement the program stategy for the Teacher Education Program are an outgrowth of the Laboratory-wide research and development strategy. At the present time, the Teacher Education Program has established 27 specific steps. The number of steps actually executed is, of course, dependent on the nature of the product being developed. They are as follows:

A. Research and Information Collecting

1. Review literature and prepare report.

B. Planning

2. State the specific objectives or behavioral changes to be achieved and plan a tentative course sequence.

C. Develop Preliminary Form of Product

3. Prepare scripts for the instructional lessons.
4. Prepare teacher handbook and evaluation forms for use in the microteach evaluation.
5. Prepare instructional tapes; record, edit and dub.
6. Prepare model tapes; record, edit, and dub.

D. Preliminary Field Testing

7. Conduct preliminary field test in 1 to 3 schools, using 4 to 12 teachers.
8. Evaluate results of field test.

E. Main Product Revision

9. Revise scripts based on preliminary field-test results.
10. Revise handbook and evaluation forms and print for main field test.
11. Revise instructional tapes; record, edit, and dub.
12. Revise model tapes; record, edit, and dub.
13. Prepare follow-up package to be used by teachers during nin months completion of the course.

F. Main Field Testing

14. Conduct field test using a sample of 30-75 teachers.
15. Collect pre-course tapes and post-course tapes of tne classroom behavior of teachers participating.
16. Collect delayed post-course tapes of participating teachers from four to six months after completing the course.
17. Evaluate main field-test results to determine if the course meets the specific behavioral criteria established for the course.
18. Distribute the avaluate follow-up package.

G. Operational Product Revision

19. Revise course for operational field test.
20. Prepare complete implementation package including all material needed by a school to conduct the course without outside help.

H. Operational Field Testing

21. Train operational test coordinators.
22. Conduct operational field test.
23. Evaluate operational field-test results.

I. Final Product Revisions

24. Make final revisions in the minicourse prior to mass distribution of the course for operational inservice use in the schools.

J. Dissemination and Distribution

25. Disseminate and distribute course for use.

K. Report Preparation

26. Prepare and distribute research and development report, giving results of all field testing of the minicourse.

L. Implementation

27. Implement course in the schools.

THE THREE TESTS IN THE MINICOURSE DEVELOPMENT CYCLE

by Walter R. Borg

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June 1, 1968

THE THREE TESTS IN THE MINICOURSE DEVELOPMENT CYCLE*

by Walter R. Borg

Introduction

The purpose of this paper is to describe the three field tests that will be a regular part of the research and development cycle for all minicourses and will also be incorporated in the development of other products in the Teacher Education Program. I believe the function of the preliminary and main field tests are reasonably well understood by personnel in the program and have been part of our development cycle almost from the start of the Teacher Education Program in February, 1967. The concept of the operational field test, however, is somewhat newer, having developed shortly after the preparation of the second annual of the Far West Laboratory in September, 1967. However, since our thinking on these three field tests has been steadily developing, I wish to take this opportunity to record our most recent ideas on the field testing and on the role of the three field tests.

The Preliminary Field Test

The purpose of the preliminary field test is to obtain an initial qualitative evaluation of the minicourse. This preservice field test evaluation is based primarily upon the judgment of a small group of teachers who take the course plus the evaluation of laboratory personnel who work in the field during the preliminary field test. As a rule, 4 to 8 teachers will be sufficient for the preliminary field test since the emphasis of this evaluation is upon qualitative appraisal of course content rather than quantative appraisal of course outcomes.

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* Based on report to the Executive Panel, October 30-31, 1967.

The Main Field Test

The purpose of the main field test is to determine whether the course reaches its objectives, i.e., whether it brings about the levels of change in teacher and pupil behavior established by the course objectives and success criteria. The main field test will collect not only qualitative evidence such as that obtained in the preliminary field test, but will collect quantative evidence on the performance of teachers who take the course. In the main field test the minicourse will normally be administered to 30 or more teachers. In order to obtain quantative estimates of teacher performance, videotape recordings of the teacher's classroom behavior will be made shortly before the teacher starts the course and shortly after the course is completed. Analysis of behavioral changes on these videotape recordings will provide the principal evidence for determining whether the main field test form of the course meets the behavioral change objectives established for the course. It is anticipated that for Minicourse 1 and for at least some of the subsequent minicourses, a delayed post-course videotape will also be made of teacher performance three to six months after completion of the course. This tape will be analyzed and compared with the pre-course and post-course tapes in order to estimate the degree of permanence of behavior changes brought about by the course. Although the primary purpose of the main field test is to determine the degree to which the course meets its objectives, a secondary purpose is to collect information that can be used to improve the course in its next revision. Thus, questionnaire and interview data dealing with the course effectiveness will be obtained from participating teachers. Because of the importance of maintaining adequate controls during the main field test and of obtaining a maximum amount of information that can be

used to improve the course, it is anticipated that the main field test of the course will be coordinated in the schools by Laboratory personnel.

If the main field test data indicate that the course falls substantially short of its objectives, it would be necessary to revise the course and conduct another main field test. The field test and revision cycle would theoretically be continued at the main field test level until the course meets the minimum success criteria established for it. In practice it is likely that unless substantial progress were made in a second main field test, the course would be abandoned.

Operational Field Test

The purpose of the operational field test is to determine whether a mini-course is fully ready for operational use in the schools. In order to be fully ready for operational use, the course package must be complete and thoroughly tested in every respect. All materials needed to coordinate the course will normally be tried out during the preliminary and main field tests. However, since these field tests are conducted by Laboratory personnel, a satisfactory operational test of the total course package cannot be obtained in the preliminary and main field test. The operational field test will be set up and coordinated by regular school personnel. Interview and questionnaire data from both the coordinators and teachers taking the course will be collected. The main emphasis on these data will be on the completeness of the total course package. Interviewers will focus on parts of the course that fail to do their job or on materials that are needed in order to make the operation of the course easier or more effective. Pre-course and post-course videotapes will normally

not be obtained during the operational field test. After the operational field test is complete and the data have been analyzed, a final revision of the total course package will be carried out. This final revision will result in the operational form of the course. At this point, the normal field testing of the minicourse will be complete and the course will be distributed for schools for operational use. During operational use of the course, we will continue to supply course coordinators with evaluation questionnaires and interview forms so that we can maintain a running appraisal of the course effectiveness and identify new problems that arise in its operational use. This final step, however, is essentially a quality control procedure and would not be regarded as further field testing of the course.

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Teacher Education Program

POSSIBLE RESEARCH QUESTIONS RELATED TO THE MINICOURSE MODEL

by
Walter R. Borg
Director, Teacher Education Program

The following is a list of research questions that have been completed by the staff of the Teacher Education Program. These ideas are stated in very brief terms, but each idea has behind it a tentative research plan which can be expanded into a design that will fit conditions that exist in any given preservice or inservice teacher educational setting. Although research projects built upon these ideas would contribute to knowledge in the behavioral sciences, the main interest of the Laboratory is in the implications of these questions to the practical problem of developing more effective products for the improvement of teaching.

1. Are behavioral outcomes on minicourses influenced by giving subjects criteria for performance? For example, on Minicourse 1 the field test data could be used as a basis for setting up specific performance criteria on each skill.
2. Will teachers adopt behavior of model teachers with whom they identify positively to a greater degree than those with whom they identify negatively?
3. What is the effect of principal interest and praise upon the behavior of teachers taking the minicourse?

4. What is the optimal number of replays of microteach lessons? What are the characteristics of teachers who profit most and least from extra replays?
5. How effective is audio feedback on microteach and reteach lessons versus video feedback?
6. What is the most effective type of model lesson sequence?
   a. Minicourse 1 model - 2 versions: first for discrimination training with behaviors cued by numbers or tones. Second essentially same except narrator identifies behavior.
   b. Minicourse 3 model - one version with stop action after behavior and immediate narrator identification of the behavior.
   c. X model - one version, behaviors cued by numbers during lesson and then behavior only reshown and identified after lesson.
7. To what extend does unfamiliarity with the VTR give spuriously poor behavior on pre-tapes?
8. What is the long term effect of Minicourse 1? i.e., what is current performance level of teachers who participated in the main field test version of Minicourse 1?
9. To what extent does preliminary cueing change the pre-course performance on minicourses (i.e., giving teacher a list of the minicourse behaviors).
10. What personality characteristics relate to improved learning in the minicourse? (The University of Texas R & D Center Data may give some clues on what behaviors are worth checking.)
11. To what extent will including questions at beginning and end of instructional and model lessons increase learning? (There are studies that suggest that such questions improve learning.)

12. What kinds of skills are best learned by the minicourse model, what kinds are not learned? (Comparative analysis of results of Minicourses 1, 2, 3, 5 and 8 should answer this.)
13. How effective is the minicourse in a roleplaying situation in which peers play role of students as compared with use of regular students?
14. A serious problem in many preservice programs is finding enough competent teachers to work with teacher trainees during student teaching. This problem plus recent research on the effectiveness of student teaching suggests that change in the conventional student teaching programs are in order. A major preservice study would compare the teaching effectiveness of students in a conventional student teaching program with those involved in a combination of student teaching and microteaching. The experimental treatment could involve devoting one-third of student teaching time to highly focused student teaching and two-thirds to the completion of three minicourses. Such a project would evaluate student teacher effectiveness not only in terms of specific minicourse behaviors but also in terms of more global indicators of the classroom climate such as the Flanders Interaction Analysis System, Medley's OsCAR System, etc.
15. A series of studies can focus on changes in pupil behavior related to specific teaching skills developed in the minicourses. For example, it might be hypothesized that teachers who successfully complete Minicourse 9 and ask increased numbers of higher cognitive questions will develop higher levels of pupil skill in answering such questions and in dealing effectively with problems involving higher order thinking.

16. Learning studies generally indicate that active involvement in the learning task results in higher achievement than passive learning. It would be desirable to develop one instructional and model lesson in which viewer involvement is maximized and compare learning gains from this lesson against one in which there is no active viewer involvement.

17. Transfer of minicourse skills to the regular classroom might be increased if the minicourse used some combination of microteaching and regular class practice. One possible design would compare the conventional minicourse model (microteach - VTR feedback - reteach - VTR feedback) with a sequence such as: microteach - VTR feedback - regular class practice - pupil feedback.

18. The minicourse relies heavily upon intrinsic teacher motivation (i.e., professional pride, desire to improve, etc.). To what extent can teacher behavior be further improved by a system of extrinsic motivation in which reward is contingent upon post-course performance? In the inservice situation it might be possible to vary the amount of salary credit a teacher would receive. A simplified example, in Minicourse 1, if terminal teacher talk during discussion lessons exceeded 50 percent of discussion time the teacher would receive no credit; 40 - 49 percent one unit of credit; 30 - 39 percent, two units; 20 - 29 percent, three units; under 20 percent four units. The actual criteria adopted would be much more complex than this example and would also include qualitative appraisal.

19. Research by Bandura (see attached abstract) indicated that showing an individual a model tape in which the model is reinforced upon performing desirable behaviors and punished or not reinforced when performing undesirable behaviors will operate in somwhat the same manner as if the individual viewing the model were being reinforced himself. Therefore, it would be possible to build verbal reinforcement into the model tapes as a device for reinforcing teachers who were watching these model tapes. Several types of model reinforcement would be possible. Perhaps the most promising would be to show an authority figure praising the teacher at the conclusion of the model lesson.

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